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Cardiometabolic outcomes in HIV-exposed uninfected (HEU) versus HIV-unexposed (HU) Children in a SA Birth Cohort: *Influence of Maternal Lipids*

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Overview

To examine the association between maternal gestational lipid profiles and cardiometabolic risk factors in children aged 5-8 years, both in the overall study population and stratified by HIV exposure status of the children

Background

Growing evidence demonstrates HEU children show increased all-cause mortality and higher morbidity *compared to HU children*, including adverse cardiovascular health outcomes

Few studies have evaluated maternal gestational cardiovascular risk factors' direct impact on offspring cardiometabolic health

Our study evaluated the influence of maternal gestational lipids on the cardiovascular health of their HEU and HU children, overall and by HEU/HU status

Methods

- This sub-study leveraged data from from a longitudinal birth cohort, the **Drakenstein Child Health Study** (DCHS), in Paarl, South Africa
- 260 children and their mothers were randomly sampled from the DCHS cohort **HEU n=100, HU n=160**
- Exposure of interest was lipid biomarkers from **non-fasted stored blood specimens of pregnant women at 20-28 weeks gestation** including total cholesterol (TC), low-density lipoprotein (LDL) cholesterol, high-density lipoprotein cholesterol (HDL), and Triglycerides (TG)
- Outcome of interest was **children's cardiometabolic markers** including blood pressure, insulin resistance, lipid and glucose metabolism and body fat composition
- Our goal was to determine **if maternal lipid metabolism** was associated with **cardiometabolic outcomes in children** aged 5-8, and further evaluate if **HIV exposure influenced these associations**
- We assessed the associations of interest **using multivariable linear regression** for the continuous outcomes to estimate the mean differences with 95 % confidence intervals

Main Findings

In our study of **HEU and HU children aged 5-8 years**, we found that *maternal gestational TC, LDL and HDL lipid profiles were associated with children's lipid levels at 5-8 years of age*

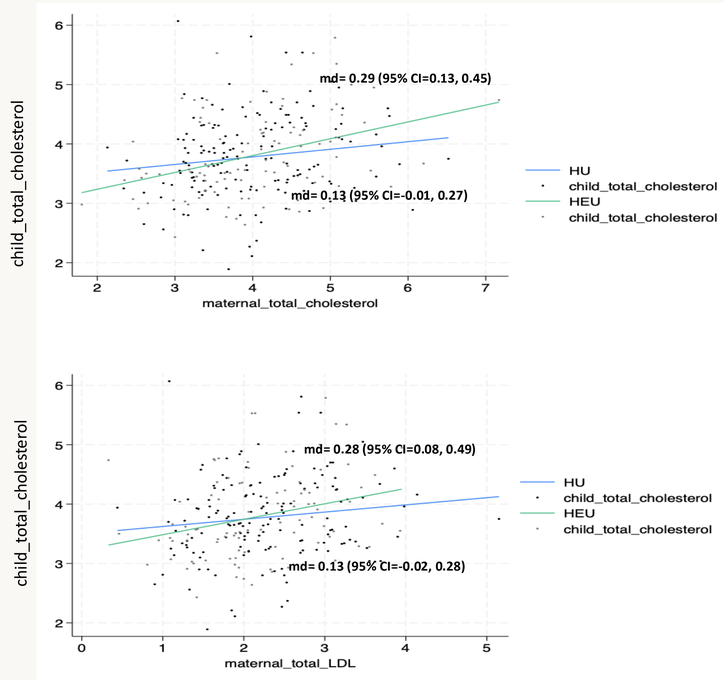
There is some evidence that this association may be modified by HIV exposure status. In our study a **stronger positive relationship** is observed between <u>maternal TC and LDL and child TC and LDL</u> in **HEU children**. Conversely, a stronger positive association between <u>maternal HDL and child HDL</u> in **HU children**.

Key Results

Maternal Lipids			Child's Lipids					
			Total Cholesterol (mmol/l)		Total HDL (mmol/l)		Total LDL (mmol/l)	
			Mean difference	95% CI	Mean difference	95%CI	Mean difference	95%CI
TC	Overall	n=245	0.19	0.09, 0.30**	-0.01	-0.06, 0.03	0.21	0.12, 0.31**
	HU	n=152	0.13	-0.01, 0.27	-0.03	-0.09, 0.04	0.18	0.05, 0.30**
	HEU	n=93	0.29	0.13, 0.45**	0.01	-0.06, 0.08	0.26	0.13, 0.40**
Total HDL	Overall	n=245	0.18	-0.06, 0.42	0.13	0.03, 0.23*	0.05	-0.16, 0.27
	HU	n=152	0.14	-0.17, 0.46	0.21	0.08, 0.34**	-0.06	-0.35, 0.22
	HEU	n=93	0.26	-0.13, 0.66	0.02	-0.15, 0.19	0.22	-0.13, 0.57
Total LDL	Overall	n=244	0.17	0.05, 0.29**	-0.06	-0.11, -0.01*	0.24	0.13, 0.34**
	HU	n=152	0.13	-0.02, 0.28	-0.07	-0.13, -0.00*	0.21	0.08, 0.34**
	HEU	n=92	0.28	0.08, 0.49**	-0.03	-0.12, 0.06	0.31	0.13, 0.48**

*p < 0.05, ** p <0.01
Adjusted for child age, child sex, child's BMI at cardiometabolic visit, HIV exposure status, maternal gestation age at enrollment, maternal age at delivery, maternal pregnancy BMI (at enrollment), length of exclusive breastfeeding

Graph



Conclusion

In conclusion, our study contributes to the growing literature that **maternal gestational lipid profiles** *influence* **child lipid metabolism**, and this relationship <u>may differ</u> based on in utero HIV exposure. However <u>larger sample sizes and among older children</u> is warranted to determine if these *differences persist*

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